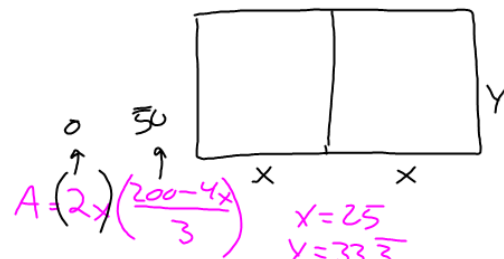
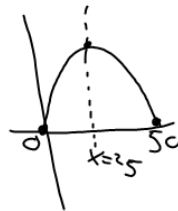


A rancher is building 2 adjacent corrals with 200 feet of fencing. What dimensions should she use to maximize the area?



$$A = \frac{400x}{3} - \frac{8x^2}{3}$$

$$A = -\frac{8}{3}x^2 + \frac{400x}{3}$$



① use # given

$$200 = 4x + 3y$$

② Solve for y or x

$$y = \frac{200-4x}{3}$$

③ Write an eq. for what you want
 $A = 2xy$

④ Plug y into eq. you want, solve

The same rancher decides to build the corrals along a river to use less fencing. Find the new dimension to maximize the area.

$$200 = 2x + 3y$$

$$y = \frac{200-2x}{3}$$

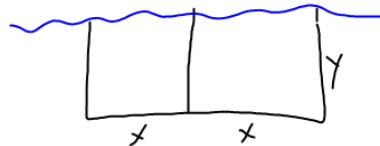
$$A = 2xy$$

$$A = (2x)\left(\frac{200-2x}{3}\right)$$

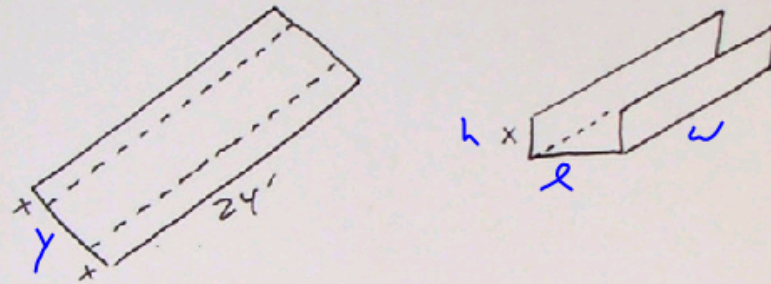
0 = 0

100

$x = 50$ $y = 33.3$



- ① A gutter is to be made from a 24 foot long sheet of aluminum. The sheet is 1 foot wide and the sides will be folded up to make the gutter. Find the length x to maximize the volume.



$$1 = 2x + y$$

$$y = 1 - 2x$$

$$V = l \cdot w \cdot h$$

$$V = y \cdot 24 \cdot x$$

$$V = 24(x)(1 - 2x)$$

$$0 = 24(0)(\frac{1}{2})$$

$$x = 0.25 \text{ ft}$$

Combinations + Compositions of functions

$$f(x) = x^2 - 3 \quad g(x) = 2x + 1$$

$$f(3) = 6$$

$$g(3) = 7$$

Find

$$\textcircled{1} (f+g)(x)$$

$$\textcircled{2} (f-g)(x) = x^2 - 2x - 4$$

$$(f+g)(x) = x^2 + 2x - 2$$

$$(f+g)(3) = 13$$

$$\textcircled{3} (fg)(x)$$

$$\textcircled{4} \left(\frac{f}{g}\right)(x) = \frac{x^2 - 3}{2x + 1}, \quad x \neq$$

$$= 2x^3 + x^2 - 6x - 3$$

② Use $f(x)$ and $g(x)$ to answer the following questions
 $f(x) = \sqrt{3x-4}$ $g(x) = x^2 + 1$

① Find $\left(\frac{g}{f}\right)(x)$ and the domain of the resulting function.

② Find $(f \circ g)(x)$ and $(g \circ f)(x)$ and simplify

③ Find $(f \circ g)(-5)$

$$\textcircled{2} (f \circ g)(x) = f(g(x))$$

$$\textcircled{1} \left(\frac{g}{f}\right)(x) = \frac{x^2+1}{\sqrt{3x-4}}, \quad x > \frac{4}{3}$$

$$\textcircled{2} (\sqrt{3x-4})^2 + 1$$

$$(g \circ f)(x) = \boxed{3x-3}$$

$$x \geq \frac{4}{3}$$

$$\boxed{\frac{\sqrt{3(x^2+1)-4}}{\sqrt{3x^2-1}}}$$


$$(f \circ g)(3) = \frac{\sqrt{3(3)^2-1}}{\sqrt{26}}$$

5	132
6	134
7	136
8	138
9	139
10	141
11	142

Best Fit Line - Linear Regression

① STAT-edit enter data

② 2nd $\boxed{Y=}$ to plot data

turn on, , L₁, L₂

③ Set window, hit $\boxed{\text{graph}}$

④ STAT, CALC, LinReg.

r-value - correlation coefficient
- tells how good line fits data

0.8 - 1.0 - very good
0.5 - 0.8 - good
0.3 - 0.5 - not so good
< 0.3 - bad

Read Section 1.5 examples and do the checkpoint problems at the bottom of each example.

Then do Sect. 1.5 #2, 7, 47, 63-72(3), 77, 94

Sect. 1.7 #3-10, 11-17(1), 34-38(even)